COMPOSITION AND METHOD FOR PRODUCING COLORED BUBBLES

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims benefit under 35 U.S.C. §119(e) to application Ser. No. 60/581,294, filed on Jun. 17, 2004, by Tim Kehoe entitled "Composition and Method for Producing Colored Bubbles the contents of which are incorporated herein by reference in their entirety for all purposes.

FIELD OF THE INVENTION

This invention relates generally to colored bubbles, and more specifically to a composition and method for producing substantially uniformly colored bubbles. The compositions are non-toxic and, if necessary, are washable.

BACKGROUND OF THE INVENTION

Bubbles have long fascinated children, adults, and scientists alike. The formation of bubbles for recreation and entertainment is a well-recognized and widely practiced past-time. In its simplest form, bubble blowing involves dipping a shaped article having an opening into a liquid soap solution followed by blowing into the opening to form one or more bubbles. A bubble is generally defined as a small volume of gas contained within a thin liquid spherical envelop. A wand, for example, is generally immersed into a bubble solution and air is blown through spherical opening to generate bubbles. Surface tension causes the bubble solution to for a film across the opening. Upon application of a sufficient force or pressure upon one side of the film, a bubble is formed and expelled from the opening.

A variety of bubble solutions have been marketed over the years, many of them claiming to have special features like longer lasting bubbles, solutions that produce greater numbers of bubbles, or solution that provide bubbles having a colorful in appearance. Some manufacturers adorn their bubble packaging with illustrations of colored bubbles, or add colorants to tint their bubble solution, in an effort to provoke the illusion of a colored bubble. Some manufactures have added modifying agents like glycerin to produce a transparent bubble with a transparent iridescent rainbow effect. One manufacturer added color directly to the bubble and/or the bubble solution in an effort to create designs on a piece of paper with what they labeled a colored bubble. This composition of liquid solution does not produce a visually colored bubble, but rather a bubble that is used as a vehicle to transport the color to the marking surface. The bubble wall is transparent and does not produce a uniformly colored bubble. Rather the color runs to the bottom of the bubble wall. Others manufacturers claim to produce bubble that is illuminated when viewed in the dark with infrared radiation or black light, but transparent in regular light.

Therefore, a need exists for the development of a solution, and a resultant bubble, that provides a substantially uniform color.

BRIEF SUMMARY OF THE INVENTION

The present invention surprisingly provides colored bubble compositions, that have a uniform coloration about the bubble.

The compositions of the present invention can also be used in, but not limited to, other fields such as toys, toothpaste, bath bubbles, shampoo, soaps, creams, lotions, diapers, lenses, paint, inks, adhesives, displays, semiconductors, biomedical, photonics, face masks, hair colors, plastics, and textiles.

In one embodiment, the present invention provides an aqueous composition that includes a surfactant and a colorant. The compositions provide a bubble that is a uniformly colored bubble. Suitable colorants include dyes, polymeric dyes, fluorescent dyes, pigments, and/or colorants. The compositions are non-toxic and/or washable, if necessary.

In one aspect, the substantially uniformly colored bubble includes a surfactant that is a polyether, an alkyl metal sulfate, a betaine, an alkanolamide or a combination thereof. In one embodiment, the polyether surfactant is a cellulose ether surfactant. In another embodiment, the alkyl metal sulfate is sodium lauryl sulfate.

In another aspect, the substantially uniformly colored bubble includes a surfactant that is a combination of a polyether surfactant and an alkyl metal sulfate.

In still another aspect, the substantially uniformly colored bubble includes a polyether surfactant that is a cellulose ether surfactant and the alkyl metal sulfate is sodium lauryl sulfate.

In still yet another aspect, the substantially uniformly colored bubble includes a surfactant that is a combination of an alkyl metal sulfate, a betaine and an alkanolamide.

In still another embodiment, the present invention provides methods to prepare compositions that provide the various bubble producing solutions used throughout the present specification.

In one aspect, the method to prepare a solution for a substantially uniformly colored bubble solution includes the steps of heating a mixture of glycerin, colorant and water to a temperature between about 50° C. and about 60° C., followed by cooling the mixture and then adding a surfactant to the cooled mixture. Generally the solution is cooled to room temperature prior to the addition of the surfactant. Typical colorants include acid dyes, FD&C dyes, food dyes, polymeric dyes, fluorescent dyes, pigments, or combinations thereof.

In particular, the surfactant is a polyether, an alkyl metal sulfate, or a combination thereof. Suitable polyether surfactants include cellulosic polyethers and suitable alkyl metal sulfates include lauryl sulfates having a metal counterion.

In another aspect, methods to prepare a solution for a substantially uniformly colored bubble solution include combining glycerin, colorant, water, an alkanolamide and an alkyl metal sulfate to form a mixture. The mixture is then heated to a temperature below about 60° C. and is then cooled to room temperature. Typical colorants include acid dyes, FD&C dyes, food dyes, polymeric dyes, fluorescent dyes, pigments, or combinations thereof.

In still yet another embodiment, the present invention provides kits that include the compositions of the invention and instructions how to prepare bubbles from the compositions.

While multiple embodiments are disclosed, still other embodiments of the present invention will become apparent to those skilled in the art from the following detailed description. As will be apparent, the invention is capable of modifications in various obvious aspects, all without departing from the spirit and scope of the present invention. Accordingly, the detailed descriptions are to be regarded as illustrative in nature and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application